AMENDMENTS TO THE CLAIMS

The following is a complete listing of the claims, which replace all previous versions and listings of the claims.

1. (currently amended) A system for in situ inspection of a surface of a hot gas component of a turbine comprising:

a robot having an elongated inspection arm extending toward the surface of the hot gas component; and

an inspection head carried adjacent an end of said inspection arm remote from controls for said robot, said inspection head manipulated by said inspection arm to locate said inspection head adjacent interior wall portions defining the hot gas component including by displacing the inspection head in a generally axial direction and generally radially toward a wall portion of the hot gas component being inspected;

wherein said inspection head is configured with a UV system to excite and detect fluorescence from a taggant material disposed in a coating on the hot gas component;

wherein the UV system includes an intensified camera <u>having a built-in intensifier</u>.

2. (original) The system of claim 1, wherein said UV system is configured for simultaneous usage with a visual inspection system on said inspection head.

3. (original) The system of claim 1, wherein said UV system includes a UV light source configured to excite said taggant material with a wavelength between about 254nm and about 300nm.

4. (previously presented) The system of claim 1, wherein said intensified camera is configured to detect fluorescence from said taggant material.

5. (original) The system of claim 4, wherein said intensified camera is fiber optically coupled to a collection lens.

6. (original) The system of claim 2, wherein each UV system and visual inspection system camera includes a suitable filter to filter out light generated from a light source for use with the other system camera.

7. (original) The system of claim 6, wherein said suitable filter for a camera of said UV system includes a 610nm optical filter with about a 10nm bandwidth operably coupled to an objective lens of the camera configured to protect the camera from stray environmental light.

8. (original) The system of claim 3, wherein a corresponding 254nm to about 300nm band pass filter is operably coupled to said UV source.

9. (original) The system of claim 4, wherein said intensified camera is a black and white (CCD) digital camera with a built-in intensifier tube.

10. (original) The system of claim 4, wherein said intensified camera includes an objective lens with an auto iris for protection from intense focused light.

11. (original) The system of claim 4, wherein said intensified camera is operably connected to said inspection arm along an axis defining said inspection arm and is axially aligned therewith such that a mirror is oriented generally at a 45 degree angle for viewing an object normal to a field of view of said intensified camera.

12. (original) The system of claim 1, wherein said UV system is configured to detect at least one of defects as small as 12.5mm in diameter and defects in said coating with less than about 1% of said taggant material.

13. (original) The system of claim 1, wherein said coating is a thermal barrier coating (TBC).

14. (original) The system of claim 1, wherein said inspection head is configured to rotate about pan and tilt axes relative to said arm.

15. (currently amended) A system for in situ inspection of a turbine having a transition piece body forming part of each of a plurality of an annular array of combustors for a gas turbine, each combustor having a combustion casing forwardly of the transition piece body thereof comprising:

a mount secured to an interior robotic manipulator and to an open end of one of said combustion casings forwardly of the transition piece body thereof;

an elongated inspection arm extending from said mount toward the one transition piece body of the one combustion casing; and

an inspection head carried adjacent an end of said inspection arm remote from said mount within the one transition piece body of the one combustion casing, said inspection head manipulated by said inspection arm to locate said inspection head adjacent interior wall portions of the said transition piece body including by displacing the inspection head in a generally axial direction and generally radially toward a wall portion of the transition piece body being inspected;

wherein said inspection head is configured with a UV system to excite and detect fluorescence from a taggant material buried in a thermal barrier coating (TBC) on the transition piece body;

wherein the UV system includes an intensified camera having a built-in intensifier.

16. (original) The system of claim 15, wherein said UV system is configured for simultaneous usage with a visual inspection system on said inspection head.

17. (original) The system of claim 15, wherein said UV system includes a UV light source configured to excite said taggant material with a wavelength between about 254nm and about 300nm.

18. (previously presented) The system of claim 15, wherein said intensified camera is configured to detect fluorescence from said taggant material.

19. (original) The system of claim 18, wherein said intensified camera is fiber optically coupled to a collection lens.

20. (original) The system of claim 18, wherein said intensified camera is a black and white (CCD) digital camera with a built-in intensifier tube.

21. (original) The system of claim 18, wherein said intensified camera includes an objective lens with an auto iris for protection from intense focused light.

22. (original) The system of claim 15, wherein said UV system is configured to detect at least one of defects as small as 12.5mm in diameter and defects in said coating with less than about 1% of said taggant material.

23. (currently amended) A system for in-situ inspection of a surface of a hot gas component of a turbine, comprising:

a robotic arm comprising an inspection head having an intensified camera <u>having a built-in intensifier</u> of a UV based inspection mechanism configured to detect surface defects of the hot gas component, wherein the inspection head is configured to rotate about a pan axis and a tilt axis relative to the robotic arm, and the robotic arm is configured to move the inspection in a generally axial direction and a generally radial direction toward an interior wall portion of the hot gas component.

24. (previously presented) The system of claim 23, wherein the UV based inspection system is configured to excite and detect fluorescence from a taggant material disposed in a coating on the hot gas component.

25. (currently amended) A method for in situ inspection of a surface of a hot gas component of a turbine, comprising:

moving an inspection head in a generally axial direction and a generally radial direction toward an interior wall portion of the hot gas component via a robotic arm coupled to the inspection head; and

operating a UV based inspection system having an intensified camera with a built-in intensifier disposed on the inspection head to detect surface defects of the hot gas component.

26. (previously presented) The method of claim 25, wherein operating the UV based inspection system comprises exciting and detecting fluorescence from a taggant material disposed in a coating on the hot gas component.

27. (new) The system of claim 1, wherein the inspection head comprises two remote focus micro-cameras, miniature lights and a pair of laser diodes configured to assist with object sizing.

28. (new) The system of claim 27, wherein the inspection head comprises first and second CCD cameras, wherein the first camera has a wide-angle lens to provide overview of the object and the second camera has a narrow field of view to provide detailed view of small areas of the object.

29. (new) A system for in situ inspection of a surface of a hot gas component of a turbine comprising:

a robot having an elongated inspection arm extending toward the surface of the hot gas component; and

an inspection head carried adjacent an end of the inspection arm remote from controls for the robot, the inspection head manipulated by the inspection arm to locate the inspection head adjacent interior wall portions defining the hot gas component including by displacing the inspection head in a generally axial direction and generally radially toward a wall portion of the hot gas component being inspected;

wherein the inspection head is configured with an intensified camera having a built-in intensifier to excite and detect fluorescence from a taggant material disposed in a coating on the hot gas component;

wherein the inspection head includes two remote focus micro-cameras, miniature halogen lights and a pair of laser diodes configured to assist with object sizing.